tion of the great arteries: management of hypoxemia after balloon atrial septostomy. *Am J Cardiol* 1981;47:299–306.
4 Allan LD, Leanage R, Wainwright R, Joseph MC, Tynan M. Balloon atrial septostomy under two dimensional echocardiographic control. *Br Heart J* 1982;47:41–3.
5 Venables AW. Balloon atrial septostomy in complete transposition of great arteries in infancy. *Br Heart J* 1970;32:61–5.

These letters were shown to the authors, who reply as follows:

SIR,—We agree entirely with Dr Abinader's comments. Neither the use of ultrasound imaging nor the umbilical vein route are new techniques for the performance of an atrial septostomy and in our paper we did not intend to suggest that this was the case. The initial intention was to review our experience with the efficacy of ultrasound imaging. In most centres the umbilical route has not been used routinely in the past because of difficulty in catheter manipulation where a full catheterisation is necessary to establish the diagnosis. Catheterisation is now necessary only for the performance of a septostomy and the umbilical route is ideal for this. We thought it appropriate to add our experience of the use of the umbilical route pioneered by Abinader *et al* because we were aware that many centres still did not use it.

We referred in some detail to the different workers who have commented on the ultrasound technique, which has become popular only in recent years. The use of the umbilical vein technique has been known for over 20 years and indeed it was described in 1985 in a major textbook on paediatric cardiology to which we referred.[1] We thus considered it was not necessary to refer in detail to the initial reports on this, and we agree it would have been appropriate to quote the early paper on the subject.

We would like to take the opportunity of stating that we are no longer sure of the accuracy of the comment that the ultrasound image is of little value in the manipulation of the catheter. In a newborn the heart was only entered after the image had been used to ensure that the catheter was inserted with the bend aligned in a posterior and inferior direction and then, at the appropriate point as determined from the image, it was turned through a 180° angle to pass through the ductus venosus and into the inferior vena cava and thence the heart.

Drs Kerkar and Dalvi question the validity of our supposition that a septostomy performed under ultrasound is as effective as one performed under fluoroscopy. Ours was a retrospective study and the size of the defect was not measured routinely. As their letter points out the "success" of a septostomy is difficult to define and there is more to it than simply the size of the defect. Because elective arterial switch procedures are performed within the first weeks of life data on long-term follow up can no longer be obtained. None of our patients required "emergency" surgery but in some prostaglandin therapy was continued or started after septostomy. The comment that "the size . . . showed the procedure was successful" was made on the basis of seeing a tear, a flapping septum, and an increase in the size of the defect. If the criticism is related to the use of ultrasound I cannot accept that there is any reason that the result could be different because the actual technique of pulling the catheter is no different with ultrasound or screening. We have not compared the results of using the umbilical and femoral routes but both have been accepted techniques for years. The facilities of a catheterisation laboratory are not needed for septostomy under ultrasound screening. In our paper we stated that for 10 months the ward side room was used when catheterisation facilities were unavailable; thereafter we have used the catheterisation laboratory routinely simply as a matter of convenience to the nursing staff; the *x* ray imaging facilities are not used. Where necessary septostomy is undertaken in the ward, intensive therapy unit, or maternity hospital. The location is simply a matter of personal choice and hospital routine and again I cannot suppose that there is any reason that the result would be different for ultrasound and fluoroscopy.

I accept that in experienced hands the risk of mitral damage is almost negligible—but reports attest to the fact that damage does occur with fluoroscopy. I am unaware of this happening with ultrasound screening. In addition I accept that there should be little difference in the time of the procedure whether ultrasound or fluoroscopy is used. In the past there might have been a potential delay in obtaining the services of a radiographer or access to a catheterisation laboratory in an emergency, but this is now of less concern because the infant can be maintained on prostaglandins and the septostomy performed at a convenient time.

Thus I agree with some of Drs Kerkar and Dalvi's comments but I disagree with the conclusion to their letter. In our centre the simplicity and convenience of ultrasound quickly made it the technique of choice. A preference for ultrasound or fluoroscopy may simply be a matter of personal choice, experience with ultrasound, and the hospital facilities available. However, my colleagues and I firmly believe that it is correct to advocate ultrasound as a more convenient and better imaging technique than fluoroscopy.

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1 Cardiac catheterisation and angiocardiography. In: Anderson RH, Macartney FJ, Shinebourne EA, Tynan M, *Paediatric cardiology*. Edinburgh, London, Melbourne, New York: Churchill Livingstone, 1987:372.

Cardiac catheterisation with 5 French catheters

SIR,—In his letter commenting on the use of 5F catheters for coronary angiography, Dr Raphael calls for further randomised studies to compare the latest 5F catheters with conventional 7F catheters (*British Heart Journal* 1991;66:114). He and your readers may be interested to know that such a trial was undertaken in Bristol using the types of 5F catheter available in 1988 and 1989.[1] The full results of this trial are due to be published soon in the *International Journal of Cardiac Imaging;* however, the main message of the trial was that the 5F catheters available at that time proved extremely unsatisfactory for coronary angiography and could not be recommended for routine use. Catheter design has progressed rapidly, or at least so we are told by the catheter manufacturers. It may be that the time is now right for a further randomised study to compare the current generation of 5F catheters with conventional catheters. Such a study will need to include not only subjective assessments of catheter performance but will also need to document objective measures of catheter performance such as procedure time, injection pressures, and incidence of significant complications.

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1 Brown E, Morris K, Wild RPH, Hartnell GG. Limitations in the performance of 5-F coronary catheters in routine angiography [abstract]. *Clin Radiol* 1989;40:648.

Genesis of Still's innocent systolic murmur

SIR,—The recent publication of the paper on Still's innocent systolic murmur[1] prompted queries about who Still was and whether Still's disease commemorates the same individual.

George Frederic Still was indeed the author of early descriptions of both conditions. His personal history has been elegantly described by Hamilton.[2] Still was educated at Caius College, Cambridge, qualified in medicine at Guy's Hospital in 1893 and, after posts at the Hospital for Sick Children, Great Ormond Street, was appointed to the first chair of paediatrics in London, at King's College Hospital, in 1906. His publications included five books and 108 papers,[3] among the earliest being his classic description of the form of chronic arthritis in childhood that bears his name.[4]

In his book *Common Disorders and Diseases of Childhood*[5] the innocent systolic murmur is referred to as a "physiological bruit" which must be differentiated from the "sometimes musical character of murmurs occurring in bacterial endocarditis". He describes the innocent murmur in these terms: "It is heard usually just below the level of the nipple, and about half way between the left margin of the sternum and the vertical nipple line; it is not heard in the axilla nor behind; it is systolic and is often so small that only a careful observer would detect it; moreover, it is very variable in audibility...; its characteristic feature is a twanging sound, very like that made by twanging a piece of tense string". This description remains accurate and authoritative to this day.

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1 Gardiner HM, Joffe HS. Genesis of Still's murmurs: a controlled Doppler echocardiographic study. *Br Heart J* 1991;66:217–20.
2 Hamilton EBD. George Frederic Still. *Ann Rheum Dis* 1986;45:1–5.
3 Franklin AW. A handlist of the writings of George Frederic Still. *Arch Dis Child* 1941; 16:154–5.
4 Still GF. On a form of chronic joint disease in children. *Med-Chir Trans* 1897;80:47–59.
5 Still GF. Common disorders and diseases of childhood. 3rd ed. London: Oxford University Press, 1920:495.

Is cardiac rehabilitation necessary?

SIR,—Precise identification of the specific needs of individual coronary patients for rehabilitative care and precise recommendations regarding the components of this care will enable precise assessment of the outcomes of these interventions.

The occurrence of a coronary event and/or

the performance of a myocardial revascularisation procedure (percutaneous transluminal coronary angioplasty or coronary artery bypass grafting) indicates that advanced coronary atherosclerosis is present. Provision of optimal care for these coronary patients in the 1990s includes identification of the specific needs of that individual patient for the prescriptive exercise training and education and counselling to help to remedy the disease. Recommendations for rehabilitative care may include a structured supervised program, exercise at home or unsupervised exercise, counselling by physicians and/or other health professionals, or the use of contemporary technological aids such as videotapes to guide home exercise or computer-interactive educational programs to provide information and counselling.[1] Exercise training as prescription rather than proscription is often the point of entry to rehabilitative care that facilitates adoption of health-related behaviours.

Education and counselling involve not only the provision of information but also training in the skills needed to improve health-related behaviours, practising these skills, and reinforcement of successful changes in coronary risk status. Appropriate provision of cardiac (coronary) rehabilitation includes selection of the relevant components and the method of delivery for an individual patient, definition of the desired outcome, and delineation of the time frame in which this outcome is expected to occur.

Exercise training, designed to decrease activity-induced symptoms and improve functional capacity, should be evaluated by this outcome measure, rather than by any effect of exercise on coronary risk reduction, psychosocial status, return to work etc. Although improved survival was a goal of exercise rehabilitation in the early 1970s, contemporary medical and surgical treatments have improved outcome so much that any added intervention is unlikely to improve survival further. The benefits of supervised and unsupervised exercise have not been compared in a randomised fashion, but for low risk patients unsupervised modest intensity exercise training may be more easily adhered to than the higher intensity supervised exercise regimens, which produce more musculoskeletal discomfort and are less convenient; this requires evaluation. As noted by Dr Lipkin (*British Heart Journal* 1991;65:237–8) the availability of risk stratification procedures and the documented efficacy of low intensity exercise permits this physician-directed exercise rehabilitation outside a structured supervised program. "Formal" exercise programmes (that is, individually prescribed exercise with instructions for implementation) are appropriate for most coronary patients. However, supervised and particularly electrocardiographically monitored exercise rehabilitation should be limited to selected patients.

Improved psychological function as an outcome of rehabilitative care should be assessed only among coronary patients who have identified psychosocial problems and for whom specific interventions are recommended. It should not be expected to come simply from participation in an exercise regimen.

Unfortunately, the "usual" supportive care may not include adequate multifaceted education and counselling, which often require considerable time and specialised knowledge—teaching dietary modification is a good example of this. However, the specific goals set for each educational component can provide a standard against which to evaluate outcome.

Perhaps analysis of the benefits of cardiac (coronary) rehabilitation are hampered less by the heterogeneity of the patients than by the heterogeneity of the questions asked.[2] An optimal regimen (rather than an inflexible programme) of rehabilitative care should be defined by the patient's physician, in consultation with the patient (and programme staff if a structured supervised programme is chosen). If suitable rehabilitative services are selected and the desired mode of implementation and expected outcome are defined for each component, the validity and efficacy of rehabilitative interventions can be assessed.

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1 Wenger NK. Rehabilitation of the coronary patient: A preview of tomorrow. *J Cardiopulmonary Rehabil* 1991; 11:93.
2 Wenger NK, Alpert JS. Rehabilitation of the coronary patient in 1989. *Arch Intern Med* 1989;149:1504.

SIR,—Dr Lipkin quite rightly defines cardiac rehabilitation "as a process by which patients with cardiac disease are restored to their optimal physical, medical, psychological, social, emotional, vocational and economical status" but in later remarks he seems to equate this process to one of physical training. Is it realistic to think that physical training alone can bring it about? Obviously it is not. Organised motor activity it is quite properly called "physical exercise" or, when it is designed to induce specific biological changes, "physical training". But this is a far cry from rehabilitation, which, as Lipkin himself reminds us, is a complex combination of medical and non-medical measures rendered much better by a term such as: "prognostic evaluation and long-term care". In other words the focus of rehabilitation is the chronically ill patient.

Chronic heart failure is a case in point. At a few cardiac rehabilitation units much of the cardiologists' time is taken up with the care of patients awaiting transplantation—care that encompasses pharmacotherapy, detection and treatment of metabolic abnormalities, nutritional support, regimens to prevent physical deconditioning, prophylaxis against infections, support replacing temporary loss of physiological functions (ultrafiltration, mechanical ventilation) attention to the sleep-wakefulness rhythm, detection and elimination of any possible causes of disease progression, the caring and compassionate counselling which can be of vital importance in many cases.

I do not know whether "rehabilitation" is a fitting term to cover the range of care from the soft follow up of uncomplicated post-infarct patient on a secondary prevention programme and the semi-intensive care of chronically, critically ill patients and I am certainly not claiming that such wide-ranging, complex undertakings should be simply assigned to the present rehabilitative facilities.

However, we have to recognise that new realities, such as longer life expectancy and effective treatment, together with the chronic nature and long duration of most cardiac diseases (ischaemic heart disease, myocardiopathies, "essential" hypertension and so forth), tend to increase their prevalence. The course of these diseases, mostly silent until an explosion of symptoms with often irremediable damage suggests that the logical approach is to make every effort to prevent acute episodes—that is, by controlling disease progression by careful chronic care and by managing recovery after unprevented episodes in order to preserve the patient's autonomy and quality of life. The health service as at present structured, focused on hospitals, is concerned primarily with resolving diagnostic problems and coping with emergencies rather than with the systematic follow up of the chronic patient. In most countries rehabilitation is in embryo and still lacks a coordinated professional approach to the chronic cardiac patient's problems, but it is the first serious attempt at a comprehensive and permanent approach to these patients.

Several current papers refer to rehabilitation as "physical training", I believe this to be an oversimplified and rather confusing view that should not be reinforced in editorials written by authoritative persons for authoritative journals.

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These letters were shown to the authors, who reply as follow:

SIR,—I agree with Professor Tavazzi's comments. We do tend to concentrate on physical rehabilitation because changes in effort tolerance are more easy to measure than the psychological and emotional responses to the treatment, which often improve with improvement in physical exercise capacity. Whether one wishes to call the post-hospital follow up and treatment of patients "rehabilitation or prognostic evaluation and long term care" is arguable. I agree that the supportive care many patients require includes "multi-faceted education and counselling". An optimal regimen tailored to the patient's requirements would be ideal as I mentioned in my editorial, but as Douglas Chamberlain and his colleagues recently commented it is obvious that cardiological resources in the United Kingdom are so restricted that at present this ideal might not be met.[1]

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1 Chamberlain D, Pentecost B, Reval K, Stevens J, McC Boyle D, Cobbe S, Ballantyne D, Shaw T. Staffing in cardiology in the United Kingdom 1990: sixth biennial survey: with data on facilities in cardiology in England and Wales 1989. *Br Heart J* 1991;66:395–404.

BOOK REVIEW

Cardiomyoplasty. Eds Alain Carpentier, Juan Carlos Chachques, and Pierre Grandjean. (Pp 280; $85·00.) Mount Kisco, NY: Futura Publishing Company, 1991. ISBN 0-87993-395X.